Amendments to the Claims:

This listing of claims will replace all prior version, and listings, of claims in the present application.

1 - 4 (Canceled)

5. (Currently Amended) The implicit function rendering method of a nonmanifold, characterized in that:

(1) an input nonmanifold curved surface is divided along a branch line, broken down into curved surface patches having no branches;

(2) numbers i are allocated to the patches in an obtained order, a front and a back of each patch are distinguished from each other, a number i^+ is given to the front, and a number i^- is given to the back;

(3) a space is sampled by a lattice point p; and

Euclid distance $d_E(p)$ to the curved surface and number i(p) of a surface of a nearest point are allocated to the lattice point;

(4) for each lattice point p, $i(p_n)$ is determined at six adjacent points p_n, and groups of $(i(p), i(p_n))$ where $i(p) \neq i(p_n)$ are enumerated;

(5) a group of new numbers are substituted for the group of numbers allocated above, but if the numbers which are first i^+ and i^- become the same numbers as a result of the substitution, no substitution is carried out for a combination thereof, whereby numbers are arrayed in order from 0 after said substitution; and

(6) in accordance with a substitution table, a region number i(p) is rewritten at each lattice point p, and an implicit volume function of a real value is comprised of the obtained volume region number i(p) and the Euclid distance $d_E(p)$ to the surface at each voxel, for rendering, wherein

$$d_E = \sqrt{(x-X)^2 + (y-Y)^2 + (z-Z)^2}$$

where the coordinate (x, y , z) is a lattice point, and the coordinate (X, Y, Z) is the point closest to a curved surface from the lattice point.

6. (Previously Presented) The implicit function rendering method according to claim 5, characterized in that:

a distance d^i_s included in a distance i is as follows:

$d^i_s \in [D_s i, D_s(i+1))$... (6)

wherein D_s is a width of each divided region of a real valued space representing a distance; and

in a position p of each voxel, a region distance $f_s(p)$ is calculated from $d_E(p)$ and i(p) by the following equation:

$f_s(p)=\min(d_E, 2^B-\varepsilon)+2^B i(p)$ ... (7),

$\varepsilon(>0)$ is set to a minute positive real number to round down $d_E(p)$ so that fs(p) can be included in a half-open section of (6).

7. (Previously Presented) The implicit function rendering method according to claim 5, characterized in that:

only when the followings are all satisfied,

$u \in (2^B i, 2^B(i+1)$ ... (8)

$v \in [2^B j, 2^B(j+1))$ ... (9)

$0<(u-2^B i)+(v-2^B j)<\alpha w$ ... (10)

but i, j $(0 \leq i \leq j \leq n-1)$, $\alpha(\geq 1)$,

wherein w is a space between two optional sample points; and u and v ($u \leq v$) are values, respectively, there is a surface between these two points

wherein with respect to two sample points A and B, the designations i, j, u, v, n, and α are defined as follows

i = region number of the point A,

j = region number of the point B,

u = region distance of the point A,

v = region distance of the point B,

n = total number of regions in which the region code distance is defined,

α = a parameter that makes it possible to generate a cured surface between the points A and B, even if the curved surface exists between the points A and B , and the points closest to the curved surface do no conform to each other, and

wherein 2^B is a range of permissible region distance values in one dimension.

8. (Previously Presented) The implicit function rendering method according to claim 5, characterized in that:

a surface position q ($\in$[0, 1]) is normalized so that a value can be on a lattice point of u when q=0 and can be on a lattice point of v when q=1; and the position q where there is a surface is obtained by the following equation:

$q=(u-2^Bi)/((u-2^Bi)+(v-2^Bj)$ ... (11), wherein 2^B is a range of permissible region distance values in one dimension.

Claims 9 - 17 (Canceled)